Notice of Allowability	Application No.	Applicant(s)	
	09/833,346	BURNETT, RODNEY CARLTON	
	Examiner	Art Unit	
	Baoquoc N. To	2162	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to *08/31/2006*.

2. ☒ The allowed claim(s) is/are *1, 3-14, 16-21 and 23-26*.

3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
   a) ☐ All b) ☐ Some* c) ☐ None of the:
      1. ☐ Certified copies of the priority documents have been received.
      2. ☐ Certified copies of the priority documents have been received in Application No. _____ .
      3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

   * Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
   (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
      1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
   (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

   Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☒ Interview Summary (PTO-413), Paper No./Mail Date *08/31/2006* .
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____.

JEAN M. CORRIELUS
PRIMARY EXAMINER

DETAILED ACTION

1. Claims 2 and 15 are canceled and claims 1 and 14 are amended in the amendment filed on 08/01/2006. Claims 1, 3-14, 16-21 and 23-26 are pending in this application.

Drawings

2. The drawing filed on 04/12/2001 is accepted by examiner.

EXAMINER'S AMENDMENT

3. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Darcell Walker on 08/31/2006, Reg. No. 34,945.

Please amend the application as follow:

Claim 1 (Currently Amended) A method for constructing and caching a chain of file identifiers in a computing system environment, the chain of file identifiers representing a full path to a file system resource the method comprising the steps of:

processing a file system resource's defined name (DN) into a file identifier (FID) and defined name database;

retrieving from the defined name database a first file identifier for a first file system resource, the retrieved file first identifier corresponding to a first defined name of the first file system resource;

adding the retrieved first file identifier to a chain of file identifiers, the added file identifier being the first file identifier in the chain;

retrieving a second ~~next~~ file identifier for a second ~~next~~ file system resource in a full path of the first file system resource;

adding the second retrieved ~~next~~ file identifier to the chain; and

repeating said step of retrieving a next file identifier for a next file system resource and said step of adding the next retrieved file identifier to the chain until a file identifier for each file system resource in a full path of the first file system resource is retrieved and added in the chain;~~.~~

retrieving ~~a~~ the first file identifier corresponding to the file system resource, the file system resource being target of an access attempt and having the file identifier chain representing the full path directory of the target system resource;

searching for a security classification category and defined name for the target resource file identifier;

updating the security classification system, when said search finds a security classification category for the target resource file identifier;

determining whether operations for the target file system resource could affect the file system name space; ~~and~~

terminating constructing and caching of the ~~a~~ chain of file identifiers when there is a determination that the operations for the target file system resource do not affect the file system name space; and

flushing the file identifier chain cache when there is a determination that desired operations on the target file system resource can affect the file system name space.

Claim 2 (Canceled)

Claim 3 (Currently amended) The method as described in claim 1 ~~2~~ wherein said flushing step further comprises ~~further comprising the step~~ of flushing a file identifier chain cache when there is a determination that desired operations on the first file system resource can ~~could~~ affect the file system name space.

Claim 4 (Currently amended) The method as described in claim 1 ~~2~~ further comprising before said file identifier (FID) retrieval step the step of processing a system resources' defined name (DN) and security classification category into a mapping database that holds a FID to DN mapping.

Claim 5 (Currently amended) The method as described in claim 4 wherein said processing system resource's defined name and security classification category step further comprises:

providing the system resource's defined name and security classification category as inputs;

obtaining a file identifier (FID) for the system resource's defined name; and

adding an ~~the~~ obtained FID to DN mapping containing the security classification category to the mapping database.

Claim 6 (Previously presented) The method as described in claim 4 wherein said searching step comprises:

searching the FID to DN mapping database for the security classification category for the FID of a ~~the~~ target resource; and

returning the security classification category and defined name for a target FID, when a security classification category for the target FID was found during said search.

Claim 7 (Currently amended) The method as described in claim 4 wherein said searching step comprises:

searching the FID to DN mapping database for the security classification category for the FID of a ~~the~~ target resource;

retrieving a FID from a constructed FID chain, when the search does not find a security classification category for the FID of the target resource;

searching the FID to DN mapping database for the security classification category for the retrieval FID of the constructed FID chain; and

returning the security classification category and defined name for the target FID, when a security classification category for the target FID was found during said search.

Claim 8 (Currently amended) The method as described in claim 7 further comprising the steps of:

determining whether there are more entries in the constructed FID chain, when the search does not find a security classification category for the FID used in the search;

retrieving the ~~a~~ next FID in the constructed FID chain; and

searching the FID to DN mapping database for the security classification category for the currently retrieved FID of the FID chain.

Claim 9 (Original) The method as described in claim 8 further comprising the step of terminating the method when no security classification category is found for any FID in the FID chain.

Claim 10 (Currently amended) The method as described in claim 3 wherein said flushing step comprises:

retrieving a path name for the target file system resource, said path name being to a directory for the target file system resource;

obtaining a vnode for the directory;

generating a FID for the directory using the vnode;

searching for a FID chain matching directory FID; and

when matching FID chain is found, removing the FID chain from cache.~~, when matching FID chain is found~~.

Claim 11 (Currently amended) The method as described in claim 10 further comprising before said searching step the step of sorting a FID chains in a FID chain cache into hash list.

Claim 12 (Currently amended) The method as described in claim 11 wherein said sorting step comprises:

retrieving a first FID chain in the FID chain list;

comparing each FID in the first FID chain to a directory FID;

when said FID chain did not match the directory FID, determining whether there are more FID chains in the FID chain hash list.~~, when said FID chain did not match the directory FID;~~

retrieving a next FID chain in the FID, and

returning to said comparing step using newly retrieved FID chain.

Claim 13 (Currently amended) The method as described in claim 11 wherein said searching step comprises:

retrieving a first FID chain in a ~~the~~ FID chain list;

comparing each FID in the first FID chain to the directory FID;

when said FID chain did not match the directory FID, determining whether there are more FID chains in the FID chain hash list.~~, when said FID chain did not match the directory FID~~; and

terminating method when no FID chain is found.

Claim 14 (Currently Amended) A computer program product in a computer readable medium for use in constructing and caching a chain of file identifiers in a computing system environment, the chain of file identifiers representing a full path to a file system resource comprising:

instructions for processing a file system resource's defined name (DN) into a file identifier (FID) and defined name database;

instructions for retrieving from the defined name database a first file identifier for a first file system resource, the retrieved first file identifier corresponding to a defined name of the first file system resource;

instructions for adding the retrieved first file identifier to a chain of file identifiers, the added first file identifier being the first file identifier in the chain;

instructions for retrieving a second ~~next~~ file identifier for a second ~~next~~ file system resource in a full path of the first file system resource;

instructions for adding the second retrieved ~~next~~ file identifier to the chain; ~~and~~

instructions for repeating said instructions for retrieving a next file identifier for a next file system resource and said instructions for adding the next retrieved file identifier to the chain until a file identifier for each file system resource in a full path of the first file system resource is retrieved and added in the chain;

instructions for retrieving ~~a~~ the file identifier corresponding to the file system resource, the file system resource being a target of an access attempt and having

the ~~a~~ file identifier chain representing the full path directory of the target system resource;

instructions for searching for a security classification category and defined name for the target resource file identifier;

instructions for updating the security classification system, when said search finds a security classification category for the target resource file identifier;

instructions for determining whether operations for the target file system resource could affect the file system name space; and

instructions for terminating constructing and caching of the ~~a~~ chain of file identifiers when there is a determination that the operations for the target file system resource do not affect the file system name space; and

instructions for flushing the ~~a~~ file identifier chain cache when there is a determination that desired operations on the target file system resource can ~~could~~ affect the file system name space.

Claim 15 (Canceled)

Claim 16 (Currently amended) The computer program product as described in claim 14 ~~15~~ wherein said flushing instructions comprise:

instructions for retrieving a path name for the target file system resource, said path name being to a directory for the target file system resource;

instructions for obtaining a vnode for the directory;

instructions for generating a FID for the directory using the vnode;

instructions for searching for a FID chain matching directory FID; and

when matching FID chain is found, instructions for removing FID chain from cache., ~~when matching FID chain is found.~~

Claim 17 (Currently amended) The computer program product as described in claim 14 ~~15~~ wherein said searching instruction further comprises:

instructions for searching the FID to DN mapping database for the security classification category for the FID of a ~~the~~ target resource;

instructions for retrieving a FID from a constructed FID chain, when the search does not find a security classification category for the FID of the target resource;

instructions for searching the FID to DN mapping database for the security classification category for the retrieved FID of the constructed FID chain; and

instructions for returning the security classification category and defined name for the target FID, when a security classification category for the target FID was found during said search.

Claim 18 (Currently amended) The computer program product as described in claim 17 further comprising the steps of:

instructions for determining whether there are more entries in the FID chain, when the search does not find a security classification category for the FID used in the search;

instructions for retrieving the ~~a~~ next FID in the constructed FID chain; and

instructions for searching the FID to DN mapping database for the security classification category for the currently retrieved FID of the FID chain.

Claim 19 (Previously presented) The computer program product as described in claim 18 further comprising before said searching, instructions for sorting FID chains in a FID chain cache into hash list.

Claim 20 (Currently amended) The computer program product as described in claim 14 ~~15~~ wherein said flushing instructions comprise:

instructions for retrieving a path name for the target file system resource, said path name being to a directory for the target file system resource;

instructions for obtaining a vnode for the directory;

instructions for generating a FID for the directory using the vnode;

instructions for searching for FID chain matching directory FID; and

when matching FID chain is found, instructions for removing FID chain from cache. ~~, when matching FID chain is found.~~

Claim 21 (Currently amended) The method as described in claim 1 ~~2~~ wherein said file identifier retrieval step comprises:

retrieving a ~~the~~ path name of the file resource, the file system resource being a target of the access attempt;

obtaining a FID for target file system resource with said path name;

determining whether obtained FID is in a FID chain; and

returning the target FID and FID chain, when the target resource FID was found in a FID Chain Cache.

Claim 22 (Canceled)

Claim 23 (Currently amended) The method as described in claim 21 wherein said file identifier retrieval step comprises:

retrieving the path name of the file resource, the file system resource being target of the access attempt;

obtaining a FID for the target file system resource with the path name;

determining whether the obtained FID is in a FID chain; and

constructing a FID chain for a parent directory for the obtained FID, when no FID chain for the obtained FID is found.

Claim 24 (Previously presented) The method as described in claim 23 wherein said FID chain construction comprises:

setting a temporary vnode to equal the vnode for the parent of the target resource;

determining whether the temporary vnode is the root directory; and

inserting a FID chain into a FID chain cache with the first FID in the chain serving as the entry search key, when temporary vnode is the root directory.

Claim 25 (Previously presented) The method as described in claim 23 wherein said FID chain construction step further comprises:

setting a temporary vnode to equal a vnode for a parent of a target resource;

determining whether the temporary vnode is a root directory;

retrieving a vnode for the next parent in a directory path and determining whether that parent is the root directory; and

repeating said retrieving step until parent is the root of the directory.

Claim 26 (Original) The method as described in claim 25 further comprising the step of inserting a completed FID chain into the FID chain cache when the parent is the root directory.

Claim 27 (Canceled)

Allowable Subject Matter

4. Claims 1, 3-14, 16-21 and 23-26 are allowed over prior art made of records.

As to claim 1, none of the prior art alone or in combination either teach or suggest "retrieving a the first file identifier corresponding to the file system resource, the

file system resource being target of an access attempt and having the file identifier chain representing the full path directory of the target system resource; searching for a security classification category and defined name for the target resource file identifier; updating the security classification system, when said search finds a security classification category for the target resource file identifier; determining whether operations for the target file system resource could affect the file system name space; terminating constructing and caching of the ~~a~~ chain of file identifiers when there is a determination that the operations for the target file system resource do not affect the file system name space; and flushing the file identifier chain cache when there is a determination that desired operations on the target file system resource can affect the file system name space: in conjunction with "processing a file system resource's defined name (DN) into a file identifier (FID) and defined name database; retrieving from the defined name database a first file identifier for a first file system resource, the retrieved file first identifier corresponding to a first defined name of the first file system resource; adding the retrieved first file identifier to a chain of file identifiers, the added file identifier being the first file identifier in the chain; retrieving a second ~~next~~ file identifier for a second ~~next~~ file system resource in a full path of the first file system resource; adding the second retrieved ~~next~~ file identifier to the chain; and repeating said step of retrieving a next file identifier for a next file system resource and said step of adding the next retrieved file identifier to the chain until a file identifier for each file system resource in a full path of the first file system resource is retrieved and added in the chain;"

Claims 3-13 are depended on claim 1; therefore, claims 3-13 are allowed under the same reason as to claim 1.

Claim 14 is a computer program product in a computer readable medium for use in constructing and caching a chain of file which is the similar in concept of the method claim. Claim 1 is allowed; therefore, claim 14 is allowed under the same reason.

Claims 16-21 and 23-26 are depended on claim 14; therefore, claims 15-26 are allowed under the same reason as to claim 14.

Conclusion

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Patent

Tzelnic et al.	(US. Patent No. 5,948,062)	Patent date: 09/07/1999.
Antur et al.	(US. Patent No. 6,243,815 B1)	Patent date: 06/05/2001.
Cohen-Levy et al.	(US. Patent No. 5,423,034)	Patent date: 06/06/1995.
Tzelnic et al.	(US. Patent No. 5,944,789)	Patent date: 08/31/1999.
Oran	(US. Patent No. 5,408,619)	Patent date: 04/18/1995.

NPL

Thuraisingham et al. Security constraint processing in a multilevel secure distributed database managment system, Knowledge and Data Engineering, IEEE Transaction, Volume 7, Issue 2, page 274-293, April 1995.

Jeong et al. A multi-dimension Rule Update in a TCAM-based High-Performance Network Security System, Advanced Information Networking and Application, 2006, Volume: 2, pages 62-66, April 18-20, 2006.

Collins et al. Security constraint processing during the update operation in a multilevel secure database management system, Computer security applications conference, page 23-32, Dec 2-6, 1991.

Koeller et al. Imaging, security, configuration, and maintenance for the masses, ACM: Association for Computing Machinery, pages 141-146, 2005.

Swift et al. Improving the granularity of access control for Windows 2000, ACM Transaction on Information and System Security (TISSEC), Volume 5, Issue 4, lines 398-437, 2002.

Contact Information

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Baoquoc N. To whose telephone number is at 571-272-4041, or unofficial fax number for the purpose of discussion (571) 273-4041 or via e-mail BaoquocN.To@uspto.gov. The examiner can normally be reached on Monday-Friday: 8:00 AM – 4:30 PM, EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Breene can be reached at 571-272-4107.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-3900.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks

Washington, D.C. 20231.

The fax numbers for the organization where this application or proceeding is assigned are as follow:

(571) –273-8300 [Official Communication]

BQ To

September 5th, 2006

JEAN M. CORRIELUS
PRIMARY EXAMINER